

REMARKS/ARGUMENTS

Claims 1, 3-16, 18-25, and 30-37 are pending in the present application. The Office Action of August 25, 2006, entered the amendments presented in the previous response and rejected claims 30-37 under 35 U.S.C. § 102(b) as being anticipated by Studtmann (U.S. Patent 4,511,835). Applicant appreciates the Examiner's indication that claims 1, 3-16 and 18-25 are allowed.

When originally presenting the amendments to claims 30-37, Applicant explained that claims 30 and 31 were amended to clarify that the "reduction" was "in the AC power." Additionally, Applicant explained that claim 30 was amended to clarify that the controller is designed to monitor at least one of the input and the output of the rectifier to "identify a reduction in the AC power in excess of a threshold." Accordingly, claim 30 was amended to clarify that the controller acts "in response to identifying the reduction in the AC power in excess of the threshold" to "adjust a switching time of the at least one switch to control an amount of inrush current permitted upon a recovery of the AC power following the reduction in AC power in excess of the threshold."

Accordingly, Applicant explained that the system called for in claim 30 is very different from the system taught by Studtmann for a number of reasons. In particular, Studtmann teaches the use of a simple comparator 104 that compares a "scaled-down" version of the DC bus voltage to a stored set point voltage supplied by the junction 97 to determine any variation in the DC bus voltage from the set point voltage and generate an error voltage proportional to the variation. See col. 9, ll. 20-35. The error voltage is then used by a rectifier controller 58 that automatically and reactively (i.e. without any analysis) adjusts the firing angles of the rectifier to attempt to maintain a steady state voltage amplitude along the DC bus. See col. 9, ll. 30-62.

One of ordinary skill in the art, given the guidance of the present application, would readily recognize that, although Studtmann is designed to maintain a steady state voltage amplitude along the DC bus, Studtmann teaches a system that would actually serve to exacerbate variations from a steady state

voltage on the DC bus under the very conditions sought to be overcome by the present invention. That is, Studtmann teaches a system that is plagued by some of the drawbacks sought to be overcome in the present invention.

In particular, when a large drop in AC power supply to the rectifier is experienced, such as may occur during a substantial fault, Studtmann identifies a drop in the DC bus voltage and attempts to maintain the steady state amplitude level on the DC bus by closing the switches of the rectifier. As the fault persists and the DC bus voltage continues to drop, the switches are held closed. When the fault is corrected and AC power is again being delivered to the rectifier, these switches will remain closed while the DC bus voltage approaches the set voltage. However, as identified in the Background section of the present application, this will result in a substantial inrush current.

The resulting voltage spike experienced on the DC bus will generate a substantial error voltage and cause the comparator 104 to open the switches of the rectifier in an attempt to drop the amplitude on the DC bus back toward the steady state set point and reduce the error voltage. However, in the case of a massive voltage spike experienced as result of a substantial inrush current, the controller will cause the switches of the rectifier to remain open for an extended period of time as the voltage spike is reduced towards the steady state amplitude. Unfortunately, since the controller simply reacts to an error voltage, the switches will not be opened until the error voltage is minimized. As such, the voltage applied to the DC bus will undoubtedly drop below the desired set point, which will cause the controller to hold the switches closed to compensate for the resulting drop in voltage below the set point, causing another voltage spike. This cyclical fight by the controller to react to peaks and valleys in the voltage applied to the DC bus will continue for quite some time in the case of a large inrush current resulting from an extended fault.

On the other hand, the system called for in claim 30 includes a controller that is designed to avoid or at least reduce the consequences of such faults by removing the controller propensity to overcompensate for faults. In particular, the claimed invention 1) reviews (directly or indirectly) the AC power delivered to

the rectifier to identify potential faults (as opposed to simply monitoring the amplitude of the voltage on the DC bus), and 2) uses objective criteria to identify faults and control the amount of inrush current permitted upon correction of the fault (as opposed to simply reacting to every change in bus voltage regardless of size, duration, etc.). Thus, the controller of the present invention is kept from attempting to overcompensate for drops (or spikes) in occurring along the DC bus by monitoring (directly or indirectly) the AC power delivered to the rectifier and adjusting the switching times of the switches in the rectifier to limit inrush currents only upon detecting a drop in AC power beyond a specific threshold.

The intelligence of the claimed system is further exemplified within the dependent claims, for example claim 33, which in part calls for the voltage indicative of a recovery to be at least three quarters of the voltage prior to the reduction in the AC power. Though not addressed in the final Office Action, claim 33 further illustrates how the claimed invention is designed to overcome the propensity of systems such as those taught by Studtmann that often overreact to variations in the power supplied or delivered and; thus, tend to exacerbate the consequences for faults.

The Office Action apparently acknowledged that Studtmann fails to teach the claimed threshold. However, the Examiner concluded that "the detecting of [a] drop in AC power beyond a specified threshold is *inherently* disclosed in Studtmann." Office Action of August 28, 2006, pg. 3 (emphasis added).

Where anticipation is found through inherency, the Office's burden of establishing *prima facie* anticipation includes the burden of providing "...some evidence or scientific reasoning to establish the reasonableness of the examiner's belief that the functional limitation is an inherent characteristic of the prior art." *Ex parte Skinner*, 2 U.S.P.Q.2d (BNA) 1788, 1789 (Bd. Pat. App. & Int. 1987). Inherency in anticipation requires that the asserted proposition *necessarily* flow from the disclosure. See *In re Oelrich*, 212 U.S.P.Q. (BNA) 323, 326 (C.C.P.A. 1981); *Levy*, 17 U.S.P.Q.2d (BNA) at 1463-64; *Skinner*, at 1789; *In re King*, 231 U.S.P.Q. (BNA) 136, 138 (Fed. Cir. 1986). It is not enough that a reference could have, should have, or would have been used as the claimed

invention. "The mere fact that a certain thing may result from a given set of circumstances is not sufficient." Oelrich, at 326, quoting Hansgirk v. Kemmer, 40 U.S.P.Q. (BNA) 665, 667 (C.C.P.A. 1939); In re Rijckaert, 28 U.S.P.Q.2d (BNA) 1955, 1957 (Fed. Cir. 1993), quoting Oelrich, at 326; see also Skinner, at 1789. "Inherency... may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient." Ex parte Skinner, 2 U.S.P.Q.2d (BNA) 1788, 1789 (Bd. Pat. App. & Int. 1987), citing In re Oelrich, 666 F.2d 578, 581 (C.C.P.A. 1981).

It therefore follows that the Examiner must provide objective evidence or cogent technical reasoning to support the conclusion of inherency or the rejection fails and must be withdrawn. In the case at hand, no such evidence has been provided. In fact, as explained above, Studtmann clearly does not operate as claimed. To the contrary, Studtmann does not include the claimed threshold and does not teach or suggest the claimed operation achieved using the threshold. To the contrary, as explained above, Studtmann teaches a system that is prone to overreact to variations in the power supplied or delivered and; thus, tends to exacerbate the consequences for faults.

Hence, Applicant contends that the assertion of inherency is not only unsupported but cannot be supported. Therefore, the rejection must be withdrawn. However, should the Examiner disagree, Applicant respectfully requests that objective evidence or cogent technical reasoning be provided to support the conclusion of inherency regarding the use of a threshold and the claimed ability to "adjust a switching time of the at least one switch to control an amount of inrush current permitted upon a recovery of the AC power following the reduction in AC power in excess of the threshold." In particular, such evidence is respectfully requested for purposes of solidifying the Examiner's position for purposes of preparing an appeal.

Finally, claim 37 calls for the controller to "move the switching-on time in a nonlinear progression towards the normal switching-on time to maintain a current delivered at the output below a threshold." Though Applicant acknowledges the Examiner's position that, prior to amendment, Studtmann

could be interpreted to teach that the movement of the switching-on time was at least one of linear and nonlinear, Applicant asserted that Studtmann fails to teach that the movement of any switching-on time is a nonlinear progression, as called for in claim 37. Responsive thereto, the Office Action asserted, "Since the controller is configured to produce firing angles of the SCR's as required dynamically, the movement of switching-on time is considered to be [a] non-linear progression." Office Action of August 28, 2006, pg. 3. Applicant finds no teaching or suggestion within the disclosure of Studtmann to support this conclusion. As such, Applicant respectfully requests detailed citations within the disclosure of Studtmann to support this conclusion. In the absence of such support, Applicant asserts that the rejection is improper because the cited prior art does not teach or suggest that which is called for in claim 37.

For at least these reasons, Applicant believes that claims 30-37 are patentably distinct from the art of record. Hence, the present application is in condition for allowance and timely issuance of a Notice of Allowance is respectfully requested. Though no fee is believed necessary as a result of this communication, the Commissioner is hereby authorized to deduct any fees arising as result of this or any other communication in the present application from Deposit Account No. 17-0055.

Respectfully submitted,

Hendrik Hans Addi Klaassen, et al.

Date: 11/9, 2006

By: 
Jack M. Cook, Reg. No. 56,098
Attorney for Applicant
Quarles & Brady LLP
411 E. Wisconsin Avenue
Milwaukee WI 53202-4497
(414) 277-5405